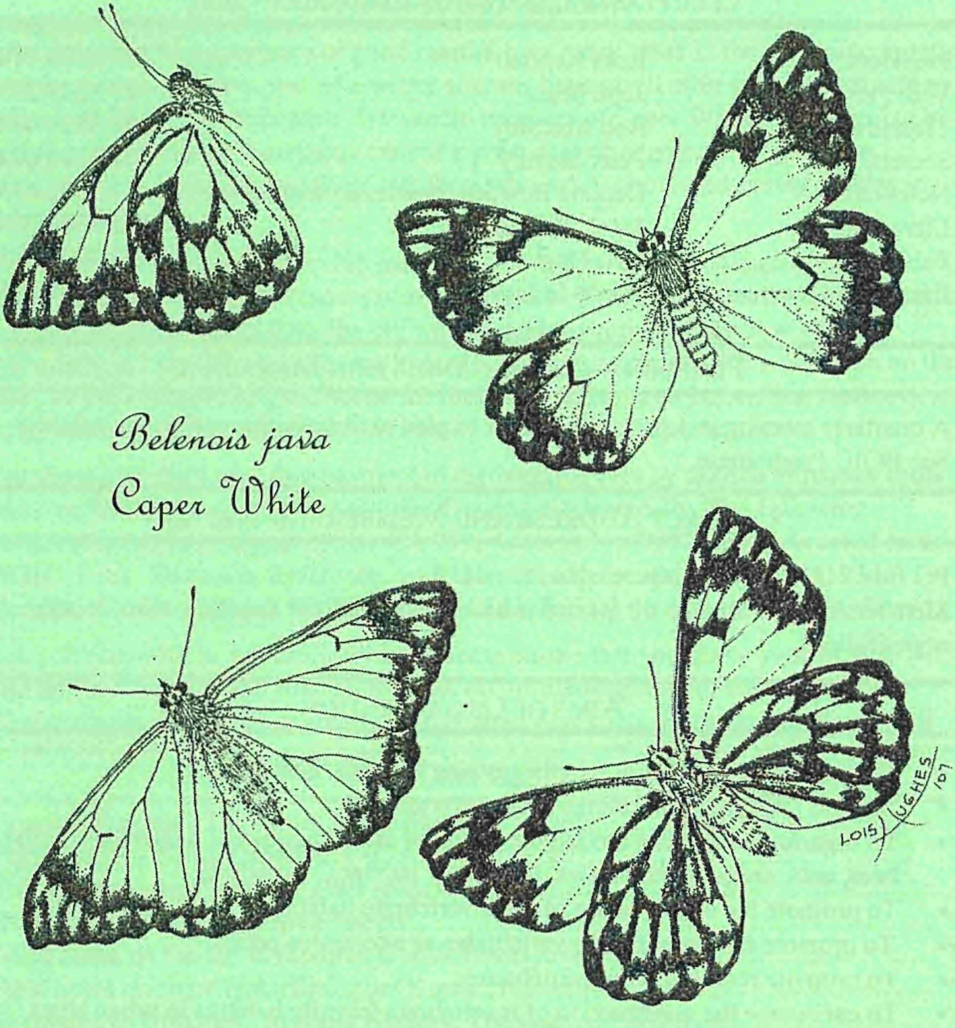

Belenois java
Caper White

Butterfly & Other Invertebrates Club Inc. Newsletter

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Club Planning and Organizing Group - 2007

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Planning and Organization Meetings

A quarterly meeting is scheduled in order to plan club activities and the newsletter. See BOIC Programme.

Contact Address and Membership Details

PO Box 2113, Runcorn, Queensland 4113
Membership fees are $15.00 for individuals and $20.00 for families, schools and organizations.

Aims of Organization

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

Newsletter Deadlines

If you want to submit an item for publication the following deadlines apply:
March issue – February 21st
June issue – May 21st
September issue – August 21st
December issue – November 21st

Cover Drawing

Belenois java – Caper White by Lois Hughes

FROM THE PRESIDENT

I am sure that the experience of good rainfall over many areas in the past three months and the more likely prospect of a wetter summer have given most of us an extra tinge of interest in our invertebrates. The untold numbers of Caper Whites on the move in October and November certainly caused a great deal of interest throughout the community. I wish to thank those members who have contributed timely articles to this newsletter.

We are extremely grateful to club member, Rob Whyte who has donated his time, undoubted talents and the resources of his business, Toadshow, to redesign the Club's website, to transfer data from the old website and to hosting of our new website, www.boic.org.au All members are invited to contribute materials for inclusion on the site. In particular, I see great scope for illustrated sections on butterflies, moths, bees, ants, arachnids, dragonflies, aquatic beasts, a wide range of plants etc.

For those members who find payment of membership fees by cheque or money order inconvenient, we now offer the option of paying electronically. The following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership no. and surname e.g. **234 Roberts**. Best wishes for Christmas and the coming new year. ***Ross***

Ed. : If you wish to pay electronically please ensure that you quote your M'ship No. and name. You will find your Memb. No. on the mailing label of the newsletter. Please advise us by mail or email if you change your contact details including email.

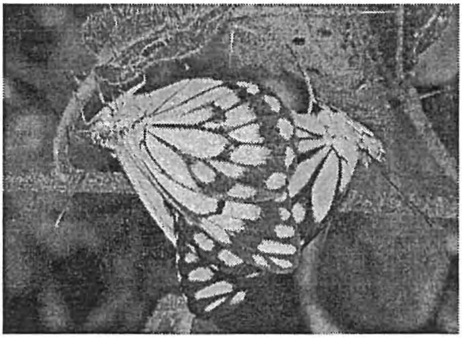
IN THIS ISSUE

Creature Feature - The Caper White Migration 4
Plant Profile - Scrub Caperberry (*Capparis arborea*) 7
Trip to Iron Range National Park (contd.) 7
Exciting new Australian stick insects 11
Some notes on the larval foodplants of *Belenois java* 12
Field notes on some butterflies from Kosrae, Micronesia 13
Excursion to Greening Australia Nursery, The Gap 22
At the light trap 24
Australian Native Bees #12 - The Cadaghi Conundrum (Part 2) 25
In the Garden with Peter 28
Reviews - CD - Review of Australian Butterflies by K.L. & L.E. Dunn 28
    Rainforest Climbing Plants by Gwen Harden, Bill McDonald and John Williams ... 29
    Australian Stingless Bees - A guide to Sugarbag Beekeeping by J. Klumpp....31
Seed Bank News and You Asked 32
Other Groups Activities and Jon's New Caledonian Butterfly Quiz 34
BOIC Programme 34

The Caper White Migration

The Caper White butterfly (*Belenois java*) has made another impressive migration this year. The migration has been noted in our newsletter in past reports including No.12, March 1999, p.15 wherein John Moss reported on "Fellow- travellers in a Caper White Migration" in October 1998. In No.31, December 2003, p.32, David St Henry in his report (from North Rockhampton) on the Lakes Creek State School butterfly habitat regeneration project, recorded seeing a migration in 2003 and in No.43, December 2006, p.22, Mary Hackett from her herb farm at Middle Dural NSW wrote on the 2005 migration : "Their mass migration overwhelmed me in the garden as I stood with arms extended, exchanging salutations as they dipped and brushed my hair and fingertips in passing."

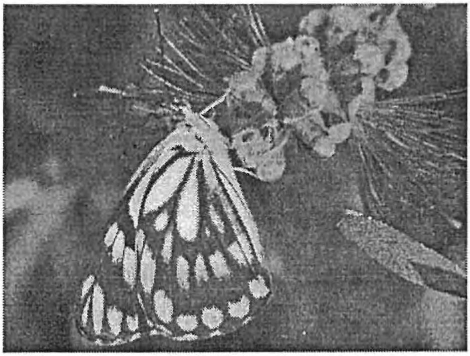
So let's take a closer look at the butterfly and its migration. The Caper White is a medium sized butterfly with a wingspan of 55mm. There are two subspecies of Caper White in Australia, *Belenois java teutonia* and *Belenois java peristhene.* On the mainland *B. j. peristhene* has only been recorded on the east coast at Percy Isles northeast of Shoalwater Bay QLD and near Sydney NSW. *B. j. teutonia* occurs in two colour forms, pale and dark, the dark form being most notable in the females. While the pale form of the female is similar to the male, the dark form has a much broader black suffusion around the edge of the wings. The larvae feed on species in the plant family Capparaceae, mostly in the genus *Capparis,* but also use the Warrior Bush (*Apophyllum anomalum*) which is widespread in semi-arid areas of NSW and southwest QLD. The pale yellow eggs, which later turn orange, are 1.4mm high x .8mm and are laid in clusters. One female was reported laying 114 eggs in 30 minutes! The larvae reach 32mm in length and are olive green to chocolate brown in colour, with numerous raised yellow spots. The pupa is up to 25mm long, usually mottled white with black patches, but sometimes pinkish white or almost wholly white or wholly black.


A mating pair

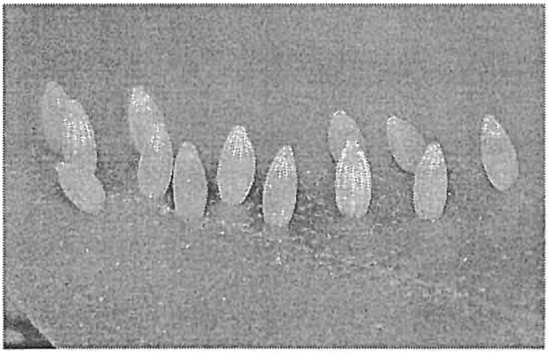
No one really understands the reason for the migration. One theory is that the larvae build up in such large numbers that they devoid the area of available host plant and the adults migrate to find more. However in many cases they fly into areas where no host plants exist or fly straight out to sea, to a certain death. It is reported that the migration takes place every year and in some years goes unnoticed due to the lack of numbers. I cannot imagine the host plants being completely stripped in those years, unless due to lack of intervening good rain, they have not recovered from previous years. The direction of the migration varies not only depending on where it is observed, but even varies during the migration. *Braby, quotes several sources which give the following directions: In southeast QLD, southeasterly migrations; inland southern NSW, southerly; ACT, northeasterly; Sydney, both northerly and southerly; central VIC, westerly; northwest VIC, southeasterly. **R.Grund, in a web article on South Australian butterflies, stated "the migrations proceeded southerly to the lower southeast region of South Australia and to southwest Victoria, then turned west to the Fleurieu Peninsula, Kangaroo Island and Yorke Peninsula, and then made a northerly turn before disappearing back north, presumably from where they started". So there remains much to learn.

As the migrations in Queensland take place during October and November, and as I take holidays during that period, I am privy to some marvelous sights during large migrations. It is hard to contemplate the number of individuals involved. In 2005 I drove from Sheldon (near Brisbane) to my bush block west of Bundaberg and saw Caper Whites the full length of the journey. They were so thick just south and north of Maryborough I could not drive without hitting them. That year I stood in my mother's garden at Manly (Brisbane) and counted 16 crossing a 20metre line in one minute. This year, on the 27th of October, I was on a 1000 acre block near Deepwater, south of Tenterfield, in NSW and saw hundreds taking nectar from two species of Tea Tree (*Leptospermum*) which were in full flower, but it was a small patch of *Callistemon pungens* that really attracted their attention. Whether it was the flower colour (mauve - as opposed to the white leptospermums) or the fact that the bottlebrush had recently opened (with a possible higher nectar content) it was the preferred species.

I later returned to the bush block west of Bundaburg (during overcast and showery conditions) where I found larvae and eggs on a caper species (*Capparis canescens*) in the open forest area. Down by the river in the vine scrub where *Capparis arborea* and *C. sarmentosa* grow, John Moss and I observed a mating frenzy. All of the Caper Whites were pairing up, except one particular female, which when males approached raised her abdomen, as if willing to accept a mate, but none obliged! We observed this behavior for some time, and no mating occurred. In researching for this article I read that the females do this to let the males know they are already fertile; my observations seem to bear this out. The butterflies here showed no obvious signs of migrating, but this may have been due to the overcast conditions. The most observed species flying were Caper Whites and Large


Adult feeding on *Callistemon pungens*

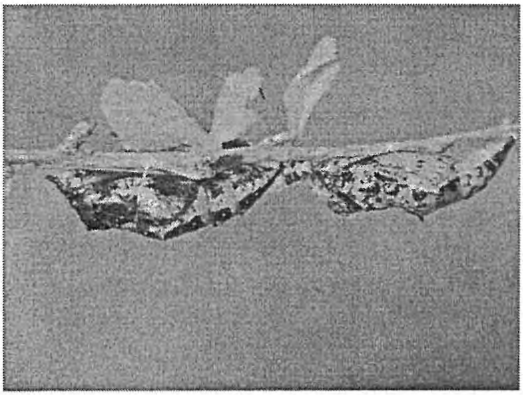
Grass-yellows. Many of the pupae found were attached to other nearby plants and some appeared to be parasitised, but after reading that the pupae can be coloured black I am not so sure.



Eggs on *Capparis canescens*

When migrating the female will stop and lay on any host plants they find, dispensing large numbers of eggs at a time. During one migration the late Dr G. A. Waterhouse estimated a total of 250,000 eggs were laid on a large tree caper in his garden. Eggs have been reported to be laid on some non host plants, including cultivated orange, *Zieria* sp. and *Correa baeuerlenii* (Rutaceae), as well as *Banksia ornata* and *B. serrata* (Proteaceae). As expected the resulting larvae do not survive and in many cases the eggs are infertile. During these times many home gardeners with cultivated *Capparis* species will experience defoliation of their plants. In my Sheldon garden, my *Capparis arborea* is planted in heavy shade and generally seems to be left alone for this reason. However this year, for the first time, I found 101 eggs on one leaf, possibly from one female.

Apart from all the media reports, some of our members have reported the following. Richard Zietek said all of his *Capparis* species have been stripped clean this year. Daphne Bowden tells the story that while attending the local Spring Parade on the waterfront at Manly, when the pipe band struck up to start the parade, as if on cue, a large cloud of resting Caper Whites rose from the wall (or maybe the sand) of the Esplanade to continue on their merry way. Lois Hughes said she was dragged kicking and screaming by husband John up the slopes of Mt Cotton to two isolated *C. arborea* trees completely covered in butterflies and still containing many larvae and pupae. (I may have embellished "the kicking and screaming" bit, but she was in a long dress and dress shoes!)



Pupa on a non host plant *Acalypha sp*

While we may not fully understand the Caper White migrations, they are great ambassadors for the insect world as they do stir up the media and have the general public talking on a subject many would not normally bother with.

Photos by Peter Hendry **Peter Hendry**

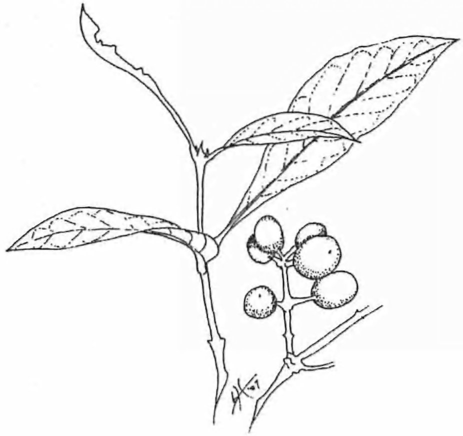
References: * Michael F Braby, 2000 : Butterflies of Australia : their Identification, Biology and Distribution. CSIRO
** South Australian Butterflies Data Sheet R. Grund
http://users.sa.chariot.net.au/~erg/java_ds.htm

PLANT PROFILE

Scrub Caperberry (*Capparis arborea*)

(CAP-a-ris) Name used by the ancients for the old world caper plant (*Capparis spinosa*), the flower buds of which have a culinary use.

Capparis arborea is in the Capparaceae family of flowering plants. Found in subtropical rainforest and dry vine scrubs, it is a small tree (to 8m) which, when young. has small leaves and numerous thorns. On maturity the leaves may reach 14cm x 6cm with far fewer thorns . The white flowers are rather spectacular with large fluffy stamens. The globular fruit is not unlike a small green orange, about 4cm in diameter. The fruit contain numerous seeds(c. 50) in a soft edible pulp.



Scrub Caperberry (*Capparis arborea*)

Propagation is best from fresh seed; cuttings are very slow to strike. The trees are slow growing and retain their immature leaves and thorns for many years. If planting to attract butterflies, it is best to plant in full sun. There are four species of butterflies listed as using *C. arborea* as a host plant: Caper White (*Belenois java teutonia*), Chalky Pearl-white (*Elodina parthia*), Southern Pearl-white (*Elodina angulipennis*) and Australian or Caper Gull (*Cepora perimale*).

Peter Hendry

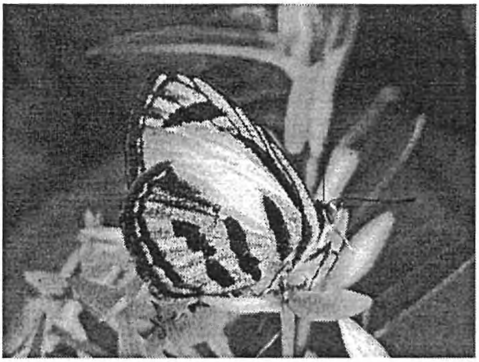
ITEMS OF INTEREST

Trip to Iron Range National Park, June 2007 – (contd.)

We awoke just after daylight on Sunday morning to the sound of the Eclectus Parrots in the trees above our tents. What magnificent birds. The plan for today was to make our way to a place called "The Knoll" as this is supposed to be one of the best places to go to observe the butterflies of Iron Range. Armed with a G.P.S. unit, we first found the bollards marking the track, left the car there and started trekking off into the bush. The track was degraded but far worse than we expected with large trees blown down across the track, bringing the "Wait-a-While" vine down with them. Unfortunately, the trees were dead, but the Wait-a-While was thriving in its new environment, making the track almost impassable. Expecting the worst from the start, I was fortunately wearing jeans, which offered some protection for my legs, but the rest of me was cut to shreds! Oh, did I also mention the Green Tree Ants? Whilst trying to untangle myself from the Wait-a-While, these ants took full advantage of the situation. I had no idea they ate humans!

After two hours or so, we manage to do the hundred yards to Phillip Hill, where we stop to have a breather. The track ahead looks clear from here. Who am I trying to kid; around the corner it all starts again! If you have never seen the Wait-a-While up there, you have no idea of the size of the thorns (I reckon that's where the crocodiles get their teeth from!). Maybe I'm exaggerating slightly, but when you have to crawl through Wait-a-While that is growing up to 50 or 60 feet above the ground, from ground level, it certainly feels that bad! Well, we gave it a good shot. It was now 1.30pm and with no sign of being able to go further and with the daunting problem of having to re-trace our tracks back through the Wait-a-While, we gave up and turned around. By the time we made it back to the car, we all looked like we had been through World War 3 and lost!!

No lifecycles were found today, but on the top of the hill there were lots of adult Lurchers, Birdwings, Ulysses, Blue Moonbeams, Rustics, Blue-banded Eggflies, Blue Argus, Meadow Argus, Green-spotted Triangles, Blue Triangles, Pied Flats, Black-eyed Planes, Yellow-eyed Planes and Pale and Dark Ciliate Blues.

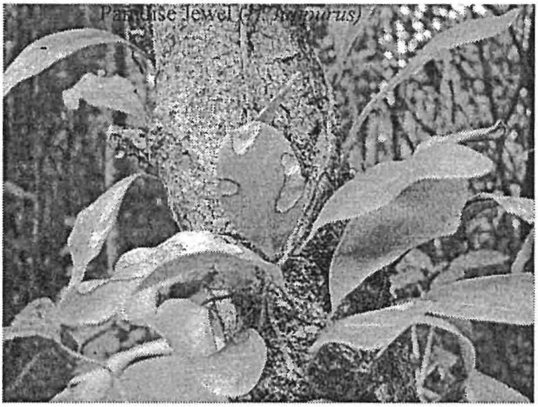


Green-banded Jewel (*Hypochrysops theon medocus*)

Monday morning found us all sore and sorry from the previous day's escapades, but we decided to walk the road south of the campground to the "T" intersection and observe the vegetation along the way. It was only about two kilometers from the campground where we found our first lifecycles. This time they were of the Green-banded Jewel (*Hypochrysops theon medocus*) both larvae and pupae on a fern called *Drynaria quercifolia* and guess what? They are also attended by the small brown stinging ants *Philidris cordatus* that were attending *H. elgneri*. I tried to ignore all the stings while I secured the photographs; not an easy task I must say. Apart from

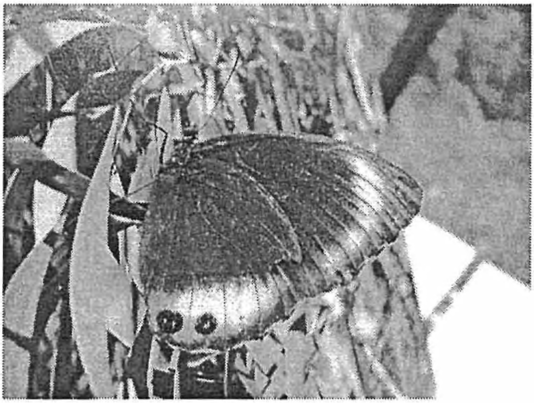
H. theon and all of the other species already photographed, we found no other early stages. The adults seen were: Orange Aeroplane, Black-eyed Plane, Yellow-eyed Plane, Dusky Knight, Orange Bush-brown and even a Swamp Tiger. After lunch, we decided to walk in the opposite direction for as far as we could. Along the way we found more larvae of *H. theon medocus*, larvae and adults of the Copper Jewel (*H. apelles*), adults of Cedar Bush-browns, Red-bodied Swallowtails, Red-banded Jezebels and the Orange Albatross.

Tuesday, we decided that we would go to Portland Road and Chilli Beach, so that we could cover a more open coastal situation. Portland Road is a quaint little coastal village along the east coast, the sort of place we would all love to disappear to. Here we saw adults of Common Grass-blues, Caper Gulls and Pale Ciliate-blues. We then moved on to Chilli Beach, which was extremely windswept. Upon entering a stand of Melaleucas, we saw adults of Purple and Small Brown Crows. We then proceeded on to Packers Creek where we observed adults of Orange Albatross and Pale Pea-blue. Further on, near Gordon Creek crossing #3, just before entering the rainforest again, we pulled over for a walk along the transitional zone. Here adults of *H. apelles* were flying quite commonly and adult photos were easily acquired. Also it was here that I noticed the feeding patterns of the Paradise Jewel (*H. hippurus)* on another small fern, *Pyrrhosia lanceolata*. Upon closer inspection we noticed that the same honey-coloured ant was very prolific, but we could see no larvae anywhere. Then, further down the tree, we found a pupa hanging out of a hole that was obviously created by the larva, in the moss around the fern. This was one of the highlights of the trip, as not many people have observed this butterfly's lifecycle, let alone been lucky enough to photograph it.



Larval feeding pattern of *H. theon medocus*

We returned to the car and drove to the site where we had previously seen the larvae of the Blue Moonbeam and after some searching found where it had pupated (very close to where it had been feeding). After taking photos of the *Philiris*, we then moved on to the Leichhardt Tree, which had been harbouring the larvae of the Amethyst Jewel, to see if I could get photos of the pupae, but again to no avail. I had all but given up when I noticed some dead, rotting branches, containing borer holes, on the ground. One at a time, I carefully opened up the borer holes, until suddenly I was again covered by a seething mass of those small honey-coloured ants. In the hollow that they came from, were both a mature larva and pupa of the jewel. Except for the egg stages, lifecycle photos were now complete, so I carefully positioned the hollow branches securely in the *Nauclea* where the ants and butterflies should have been able to survive. After lunch we drove to West Claudie River and then on to the Claudie River where the Eclectus Parrot lives in the "smugglers tree". No new lifecycles were observed and by now the rain was becoming very monotonous. The only butterflies we saw flying were the Palmfly (two males and one female) and the Pale Cerulean. Wet and tired we returned to camp where we had tea and discussed the possibilities of being rained in for an extended period. It was then that we decided to leave first thing in the morning.



Palmfly (male) underside

Wednesday morning was still raining and everything was saturated by the time we packed up. But spirits were still high; after all none of us could think of a place where we would rather be stuck. The track out actually didn't seem to be as bad as it was on the way in, the only hiccup being when we were on the exiting side of the West Claudie River and the Nissan stalled in the creek, with that fifty degree wet clay slope in front of us. But just as it did on the way in, the Nissan crawled out of the creek, not missing a beat.

The afternoon saw us just on the northern side of Coen where we re-pitched our wet tents and hung out our sleeping bags to dry in the last rays of sunshine. We decided to walk along a creek bed whilst waiting for the sun to go down and disturbed some resting adults of No-brand Crows, about a dozen in all and also noticed a small lycaenid flying fast around the tree tops. When it finally landed within view, we could see that it was the adult of the Cyane Jewel (*Hypochrysops cyane)*, another butterfly that I had not taken lifecycle photos of, so the hunt was on in the failing light. First things first. We checked the hostplant list for this species in the Michael F. Braby handbook, "The Complete Field Guide to Butterflies of Australia" and then returned to the creek bed. Sure enough, within an hour I had both larvae and pupae photographed. At that site they were using both acacias and a *Lophostemon* sp. as hostplants.

All up, we managed to get lifecycle photographs of eight different lycaenid butterfly species, which we put down to a very successful trip. But then, how could one go to an area, which contains approximately 60% of Australia's butterfly fauna and not be successful?

Photos by Bob Miller **Bob Miller**

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Exciting new Australian stick insects

A monograph by Brock & Hasenpusch has been published in 2007 (Studies on the Australian stick insects (Phasmida), including a checklist of species and bibliography. Zootaxa 1570: 1-84). There are six new genera and sixteen new species, also numerous taxonomic changes, which leaves 104 valid species + one subspecies. The checklist includes scientific and common names. Interested parties can obtain a pdf or printed copy directly from the Zootaxa website www.mapress.com/zootaxa/ (the abstract is free), or wait for our forthcoming field guide on Australian phasmids (CSIRO Publishing). Photographs of new species have been posted on the Phasmida Species File http://phasmida.orthoptera.org as an example, go to Search – Taxon then key: *robinsoni* and you will find several photographs.

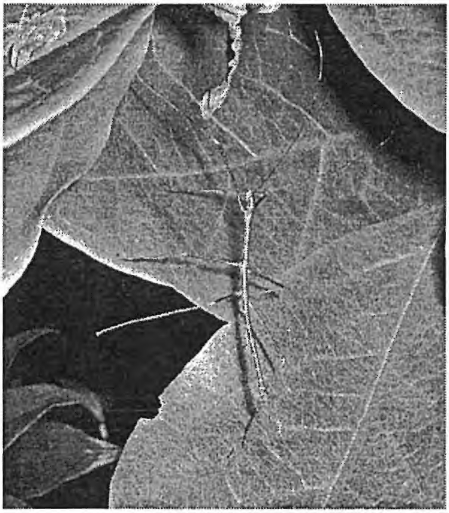

Figure 1 *Candovia robinsoni* male (Robertson, NSW, photo by Paul D. Brock)

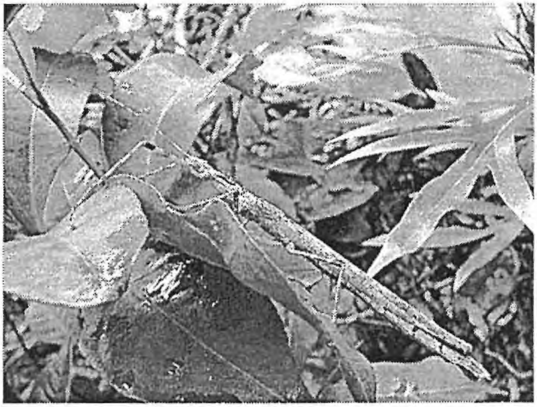

Figure 2 *Spinosipyloidea doddi* female (Garradunga, north Queensland, photo by Jack Hasenpusch)

New species include the delightful, small, wingless *Candovia robinsoni* from Robertson, NSW, named after Martyn Robinson, to exciting winged species. Two stunning small winged rainforest species from Queensland (*mouldsi* and *sztrakai*) are described in the new genus *Micropodacanthus*. *Spinosipyloidea doddi* is, of course, named after Frederick Parkhurst Dodd, the 'Butterfly Man of Kuranda'. However, the most unusual new species is the robust, 97mm long *Davidrentzia valida*, which has vestigial wings; it is known by a single female from Lord Howe Island. The new genus is named in recognition of David Rentz, one of the world's leading specialists in orthopteroid insects, who collected the specimen at Stevens Reserve, near Signal Point in 1988. Surely it must still be found on the island?

One important change is that a 'pest' species has been renamed *Anchiale austrotessulata* Brock & Hasenpusch, 2007. This is clear in the Abstract, but the checklist of species on p. 72 under *Anchiale* should read:

> *A. austrotessulata* Brock & Hasenpusch new name *Tessellated Stick-insect*
> = *Ctenomorphodes tessulatus* (Gray, 1835) (preoccupied, hence becomes a junior homonym of *Mantis tessulata* Goeze, 1778: 37 [type locality unknown], transferred to *Anchiale* by Kirby, 1904: 393)

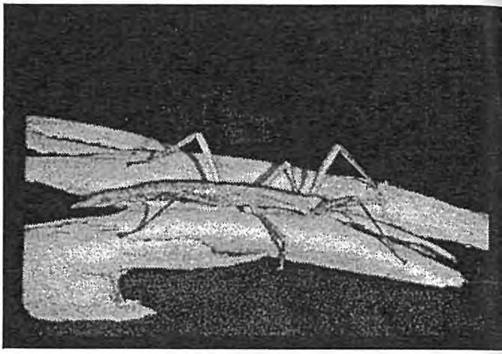

Figure 3 *Davidrentzia valida* female (Lord Howe Island, photo by David Rentz)

Unfortunately at final proofs this was left at the end of the *Anchiale* section, where it appears to be listed beneath *A. spinicollis.*

Paul D. Brock & Jack Hasenpusch

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Some notes on the larval foodplants of *Belenois java*

It was a good season for Caper Whites (*Belenois java*). Specimens first appeared in late September and they are still flying around in my Brisbane garden (late November) although the peak has now come and gone.

There are many *Capparis* species in my yard and all seemed to have been munched on by their larvae to various degrees.

By far the best *Capparis* species for a home garden is *Capparis lucida.* While most *Capparis* are slow growing and are thorny to various degrees during their lives *C. lucida* is a rapid growing thornless plant which is a preferred host for the Caper Whites. The plant is also a host for *Cepora perimale* (Caper Gull) and *Elodina parthia* (Striated or Chalky Pearl-white) however these species never defoliate the plant like the Caper White does. Most likely all the typical caper feeders would utilise this plant.

Although a North Queensland plant (a rambling shrub of dry scrub or coastal areas) the plant does very well in my Brisbane garden growing to a densely foliaged shrub 3m high by 2m wide in the space of 12 years. This is despite the predations of the Caper White larvae which strip the plant bare each year.

Eggs are laid anywhere on the plant although the fresh shoots are preferred. Larvae eat all the leaves on the plant. Young larvae are gregarious, but older larvae spread out over the plant. Competition is intense as there can be hundreds of larvae on the plant and late hatchings starve to death as the leaves run out. At this stage also the parasitic flies and wasps have moved in and this is a disadvantage of having the butterfly breeding in the garden, as they leave behind a large population of predators which then attack the more permanent species in the garden. For the Caper Whites this is no problem, as they simply move on.

Pupation occurs commonly on the defoliated stems and many leave the plant to pupate on neighbouring shrubs, interestingly preferring the tops of the leaves in this instance. Pupal colour types include the pink or white with black spot forms which can occur alongside one another.

Other *Capparis* species used as hosts were *C. sepiaria* and *C. lasiantha,* however these are both spiny vines and cannot support a lot of larvae unless very large (old) plants. *C. arborea* is a common host in South East Qld, however in a garden situation this is a slow growing tree and the mature leaves of this plant can be tough which the larvae struggle to get through, making characteristic chewing marks on the leaf edges or chewing at the soft surface of the leaves. After twenty years my *C. arborea* is still a spindly shrub (3m high) and cannot support many larvae.

I am patiently awaiting the *C. lucida* to flower and produce seed – it hasn't happened yet but maybe one day!

Dennis Bell

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Field notes on some butterflies from Kosrae, Micronesia

Kelvyn L Dunn e-mail: kelvyn_dunn@yahoo.com

Introduction

The high volcanic island, Kosrae, in the Federated States of Micronesia is one of the easternmost Caroline Islands, remotely situated some 3600km east of Mindanao Island (Philippines) and 1500km northeast of New Britain (Papua New Guinea). The enigmatic stone city on adjacent Lelu Island (Fig. 11), dating from c.1250-1400 AD makes this a place of some archaeological interest, but there are few other attractions for tourists to venture out to this unpretentious backwater. Entomologically it is poorly known. I visited briefly in the wet-season months of June and July 2003, and searched for the 10 known species of butterfly, with the added hope of increasing the count. Examined habitats included lowland jungle, agro-forests, beach scrubs and mangrove ecotone, hilltops, village gardens, and rural areas. Butterflies were rather uncommon generally, and I saw only four species in lowland areas, a mere 40 percent. I had considered ascending Mt Finkol (629m) to seek out *Hypolimnas pithoeka* and *Papilio xuthus* in pristine forests at moderate altitude. However, rain-clouds regularly shrouded the central peaks making the two-day return hike from Utwe village, potentially unproductive. Elsewhere the similarly rugged, jungle-clad interior is largely inaccessible and unexplored. Some tracks were too overgrown to venture far along, alone, for fear of becoming lost. The density of the tropical vegetation and paucity of blossoming shrubs near ground level makes seeing butterflies challenging, even for the experienced observer.

In my experience, most of the species known from Kosrae favour open areas including village gardens. The six species not seen were: *Papilio xuthus, Catopsilia pyranthe* (White Migrant), *Eurema hecabe* (Large Grass-yellow), *Danaus plexippus*(Monarch), *Hypolimnas pithoeka* and *Euchrysops cnejus* (Spotted Pea-blue)(Tennent 2006). Of these, three may be irregular in appearance, being transitory elsewhere in the region (Braby 2000, Parson 1998, Tennent 2002). In addition, some common genera seem conspicuous by their absence. In June, in a garden at Okat, near the airport, I thought I saw a large *Junonia* sp., flying with the characteristic flight of that group. Likely contenders such as *J. erigone* or the *hedonia* group remain unknown. The chocolate-brown butterfly, visible only momentary –inadequately for identification – was probably just a *Melanitis,* disturbed by the passing tray-truck on which I had hitched a ride. Nonetheless, visiting collectors should watch for *Junonia* species, as occasional vagrants may arrive from New Guinea in favourable seasons. Finally, despite the close proximity of Kosrae to potential source populations, skipper butterflies were absent, a feature in common with other remote Pacific islands I have visited.

To supplement this report I have extracted some frames from my video recordings of butterflies on the island – perhaps the only live images currently available. 24-hour times given for butterfly activity are in Pohnpei time (PONT) as used on Kosrae. The video was shown at a general meeting of the Entomological Society of Victoria and commentary from my talk, outlined at that time (Dunn 2004), is now documented more fully herein.

Species encountered

Pieridae

Catopsilia pomona (Lemon Migrant)
This migratory butterfly is widespread in the Pacific. It was locally abundant in villages and rural areas. Adults were conspicuous in flight from 0940h to 1440h during sunny weather, regularly patrolling gardens and roadways, but often at moderate heights. At Malem on 2 July, I saw male of the dry season form feeding at snakeweed (*Stachytarpheta*) at 1335h. This close encounter facilitated species identification beyond any doubt.

Nymphalinae

Hypolimnas bolina nerina
Males of the Varied eggfly showed unusual variation not seen in Australia or elsewhere in my experience. In many, a central white spot on the hindwing underside

(Figure 3 & 15 cf. 4), corresponding with the one on the upper-side (Fig. 6) is all that remained of the post-median band. This male melanism may have mixed Asian origins, but none corresponded with the SE Asian subspecies *jacintha* suggesting predominantly an Australian plate origin for the population on Kosrae, based on the sample of adults I encountered and photographed. Adults were active from 0800h to at least 1745h. Males commonly perched along tracks in shore scrubs (Fig. 13). The reclusive females, seen less often, became conspicuous in late morning and mid afternoon at times of inspection of, and oviposition on *Syndrella nodiflora* (Asteraceae) (Fig. 10). They utilise this same herb in northern Queensland and farther east in the Pacific at Noumea (New Caledonia) (pers. obs.). I found two mating couples on the summit of Lelu Hill, one of which is illustrated (Fig. 14). Simultaneous matings suggest a recent emergence. The fresh females had ascended the hill to seek mates, several male contenders having established territories in anticipation of their arrival. At 1000h, one coupled female flew in a circuitous flight whilst pursued by several courting males, whose persistent inspections delayed the couple's landing for some 5 minutes (Dunn 2005).

The female is polymorphic, with some forms being commoner on certain islands, perhaps linked to founder affect after these mimicry complexes evolved elsewhere. The bright black and orange variety (Fig. 5), rather similar to the one designated form 'E' in Braby (2000), was dominant during my visit. Its aposematic colours and patterns resembled an unpalatable tiger butterfly (*Danaus* sp.) and might deter some predators in parts of Asia where the models occur in sympatry. It favoured exposed areas along coastal forest tracks. A second but rare female form resembled a crow butterfly (*Euploea* sp.). Unlike its orange siblings, it flew and settled amongst the forest understorey where it was well camouflaged in the dappled light (Fig's. 7 & 8). I chanced upon one basking, enabling a close view of the upperside. I half expected her to be the Asian female of subspecies *jacintha*, seen during my travels in SE Asia, but she was not that form. Supposing then a different species, such as *H. pithoeka* or *H. antilope*, I pursued her immediately for a photograph. She then fluttered over and oviposited on some nearby herbs growing on the shore. She was gone before I hardly had the camera running! I hunted at Walung village for an hour for better images but to no avail. Such are times when one should resort to the net rather than the camera! The next day though, I thought I was in luck when I saw another of this crow-form at Utwe on 2 July at 1500h. This one was flying adjacent mangroves in the estuary, but soon headed off down river in the opposite direction to me.

I have not seen a matching museum specimen and was not able to secure a quality image (Figures 7 & 8 are too dark), so a description from my video frames follows as a compromise. ***Upperside***: Forewing (FW) blackish brown with two subapical white spots and postmedian band reduced to single white spot at costa near cell. Hindwing (HW) blackish brown with terminal double row of contrasting white spots (like *Euploea*). ***Underside***: FW dark brown with two prominent subapical spots, and a largely obscured series of spots continuing towards tornus. Postmedian band reduced to two spots adjacent costa, remainder obscured. Series of pale cell bars, edged black, adjacent costa (typical of species), double row of white terminal spots largely obscured. HW with pale costal postmedian spot, and faint, inner edge-band and outer terminal white moon-crescents (again typical of species). (J. Tennent kindly examined these images and confirmed my identification as *H. bolina*).

Satyrinae

Melanitis leda pomapensis (Evening Brown)
Adults of this subspecies, described from Pohnpei, another island in the Caroline group, were localised along creeks, particularly in exposed areas where a species of 'Guinea grass' proliferated. In disturbed or modified habitats, where the canopy was sparse or fully cleared, the adults' behaviour modified with prevailing light levels. During much of the day, they remained quiescent, settled in shade amidst dense grass tussocks and well hidden. They were active in full sunshine from early morning (0800-0815h) continuing to about 1015h when overcast. On sunny days, they would not fly after midmorning unless routed from their haunts and would quickly resettle. In late afternoon (1645h), they became increasingly active again, flying to at least 1845h in forest regrowth areas (Fig. 12). They were hard to see in very low light and were probably active beyond this time, as those on Yap Island continued flying in open areas until nightfall, still visible on night-light video challenging other males in the dark. All adults were of the wet season form (WSF), recognised by the large eyespots on the hindwings (Fig's. 1 & 2).

Adults were also locally common deep within rainforest along the Mt Ohma trail. Full midday sunshine brightly illuminated the foliage atop of the closed canopy, yet from 1220-1300h, males patrolled in the deep shade, never ascending to the light above the darkened forest floor. They perched on low hanging branches, frequently flying out to inspect patrolling males active some 4-5m up in the lower sub-canopy. It is likely these jungle-based populations would fly much of the day and perhaps the night also. I think this would make an interesting study.

The primary forest on Kosrae is very dark within, mainly because introduced pest vines, particularly *Merremia* (Convolvulaceae), now cloak the canopy letting very little light penetrate to the ground. There is no understorey but rotting leaf litter. In such blackened jungle, the larval host grasses remain sparse, and I guess the ancient forests were similar to this. Perhaps during the evolution of this species, it expanded from being a rare and localised primary forest inhabitant, to the prolific open-forest or closed-forest fringe-dweller, now of forced crepuscular behaviour. In the past, this species would have opportunistically bred in jungle areas where the forest canopy was intermittently broken by cyclones, allowing grasses to flourish for short periods. Prehistoric human activities of firing and clearing jungle for villages and crops perhaps created habitat more suited to its hosts, but the butterfly has retained its light sensitivity as a former jungle dweller. An abundance of hosts is now available but at a trade off against restricted time for foraging, mate-location, and oviposition.

Lycaenidae

Zizula hylax dampierensis (Dainty Grass-blue)

This tiny butterfly is widespread in the Pacific and locally abundant in damp areas adjacent to jungle clearings. I saw many feeding at flowers of 'Wedelia' (*Sphagneticola trilobata*: Asteraceae) (Fig. 9), a noxious weed. One also fed at dew on the flower's petals before seeking its nectar. They sought nectar during late morning and early afternoon, between 1115-1335h, but probably feed at other times too. Adults were most active, fluttering close to the ground, from at least 0930h in mid morning through to 1530h, in mid afternoon, the end times I chance encountered them during my exploratory wanderings. Males displayed the wing-wagging dance when newly settled, a behavioural characteristic of the species seen elsewhere in the Pacific, including Queensland, and which immediately distinguishes it from similar looking grass-blues.

Video-frames from Kosrae showing some species encountered and habitats

Figure 1. *Melanitis leda* WSF, diurnally resting in a 'Guinea grass' creek (Tofol, 2/7/03 at 1015h). The male is perched on a *Panicum* sp. (Poaceae). This grass genus hosts the larvae in Australia, and is almost certainly a host plant on Kosrae. The mottled underside of this butterfly is variable both within and between seasonal forms, and acts cryptically amongst leaf litter during the day.

Figure 2. *M. leda* WSF perched in sub-canopy, 2-3 metres above ground, having landed following a brief evening flight amidst secondary forest (Lelu Island, 30/6/03 at 1800-1845h). This male repeatedly followed an elliptical patrol circuit returning to perch on one of three branch-sites on the same shrub. It showed strong site tenacity during the fading light as night approached.

Figures 3 & 4. *Hypolimnas bolina* males perched in low beach canopy: **Figure 3** shows the dark form underside, common on this island compared with the familiar white-banded form (**Figure 4**) (Walung, 1/7/03 at 1330h & c.1430h, respectively).

Figures 5. *H. bolina* female basking, post-oviposition (Malem, 2/7/03 at 1100h) - the usual female form seen on Kosrae.

Figure 6. *H. bolina* male basking (Walung, 1/7/03 at 1420h). In flight, the glowing purplish-blue haloed white spots resemble those of a form of *Euploea eunice* (= *leucostictos*) with which it flies farther west on Guam (USA), in the Northern Mariana Islands. The forewing of *E. eunice* on Guam has an enlarged bluish haloed white spot above veins 1a+2a, which is prominent when fluttering at eye-level against a backdrop of dark vegetation (pers. obs.). In most places in the Pacific though, including Australia, the male eggfly is without its (apparent) Batesian, unpalatable model.

Figures 7 & 8. *H. bolina* female (Walung, 1/7/03 at 1430h) – a remarkable crow-mimic. The dense and darkened thicket of stems where she lay prevented adequate photographic contrast and sharpness. I encountered only two individuals (the other at Utwe) and just the one settled enabling video photography as she oviposited among herb stems. The costal bars in the cell on the underside of the FW indicate a *Hypolimnas* species and the white sub-terminal patterns on the HW underside identify her as *H. bolina*. The HW upperside also had a fine white sub-terminal band, mimicking one or more *Euploea* species. In figure 10, her forewings have just opened in anticipation of flight. The blackish FW with its two crow-like subapical white spots, and part of the HW, were visible on but a few frames of video – a snapshot within a blur of movement. No *Euploea* species apparently occurs on Kosrae (Tennent 2006).

Figure 9. *Zizula hylax* male feeding at flowers of *Sphaneticola trilobata* (Asteraceae) (Malem, 2/7/03 at 1115-1135h).

Figure 10. *Syndrella nodiflora* (Asteraceae) – a commonly used larval host of *H. bolina* on Kosrae.

Figure 11. Stone ruins on Lelu Island, showing jungle regrowth in background – a favoured haunt of *M. leda.*

Figure 12. An area of secondary forest growth on Lelu Island where several males had established their crepuscular territories.

Figure 13. Island tranquillity: typical shore habitat at Walung. It was along this village path that I found several males of *H. bolina* vigilantly maintaining perch sites and defending airspace.

Figure 14: View north through the canopy from Lelu Hill lookout on Lelu Island. Here mate location in *H. bolina* took place.

Figure 15. The second of the two mating pairs encountered on Lelu Hill (3/7/03 at 0945h).

Figure 16. An elderly islander feeding a toddler in Walung whilst supervising the construction of canoes being hollowed out from felled tree trunks. The villagers' lifestyle was still relatively traditional being without electricity. Access was then by an all-day arduous hiking trip, or by lagoon crossing in an out-rigger canoe or hired private speedboat (my choice), but a road, then under construction, now connects the village to Utwe forever ending its isolation. Accommodation was by home-stay only. In the evening I ate raw tuna, a staple dish in this fishing village, and slept without pillow on plant fibre mats on the ground, as was still the locals' custom. Log footbridges spanned coastal mangrove swamps connecting the village huts. These 'walkways', raised to heights of two metres in places, were slippery and difficult to navigate by the unaccustomed, especially at night using torchlight! Breaking a leg out there is not a good idea.

Acknowledgement

Bob Harwood, formerly of the Biodiversity Conservation Division, Department of Natural Resources, Environment and the Arts, Darwin NT, kindly identified the *Syndrella* species from photos of foliage and flowers.

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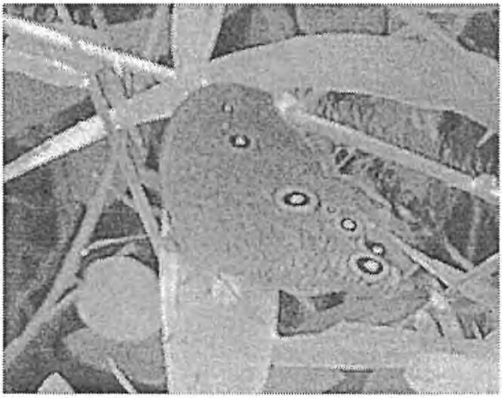


Fig 1

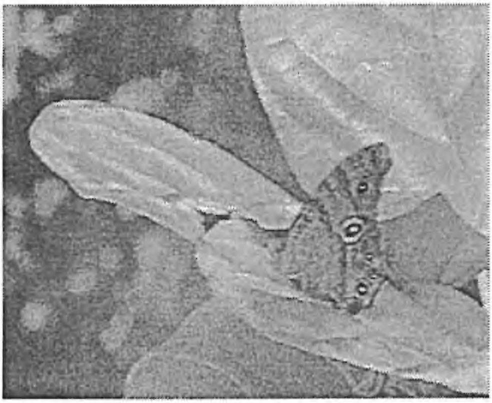
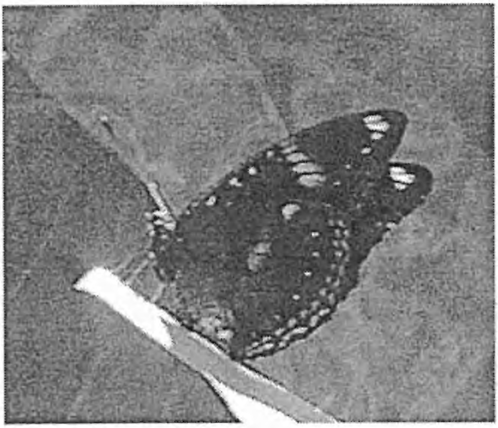


Fig. 2



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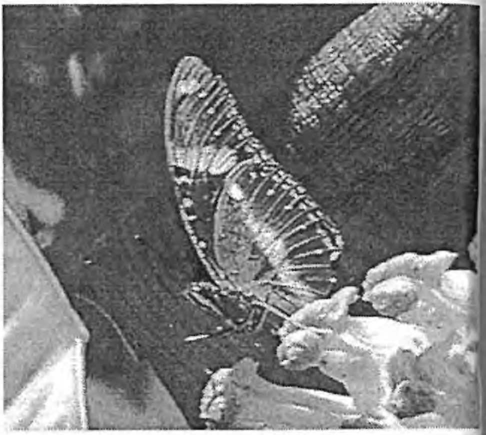

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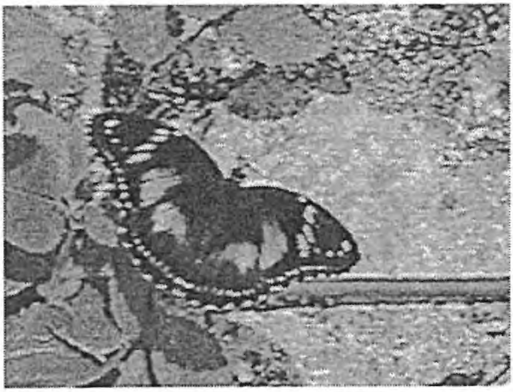

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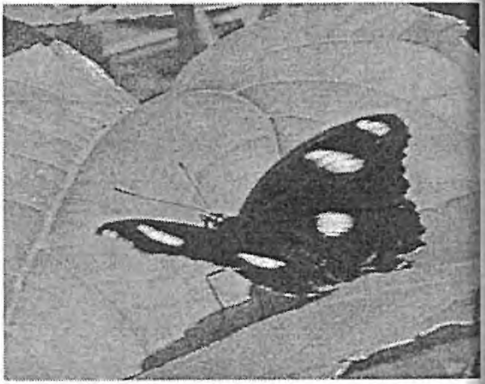

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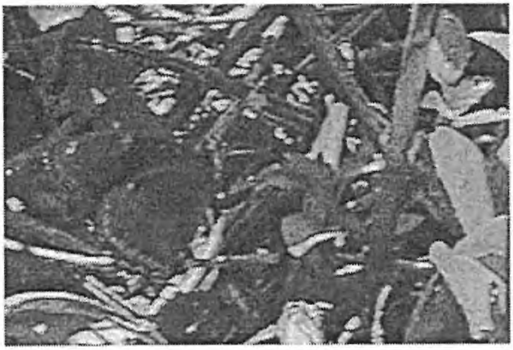

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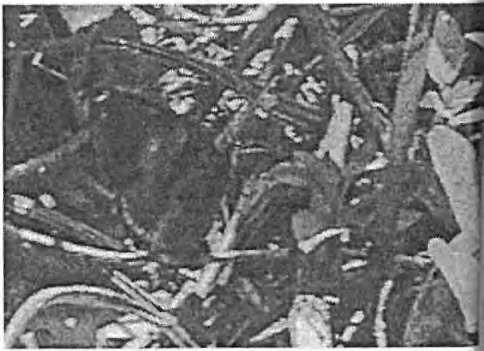

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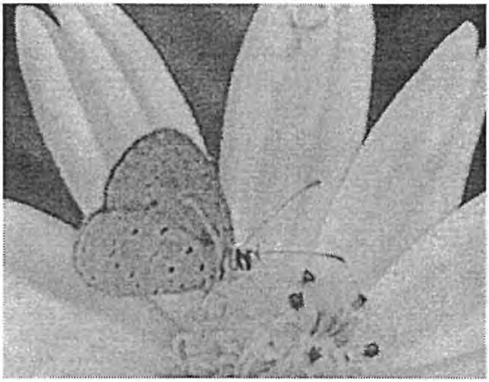

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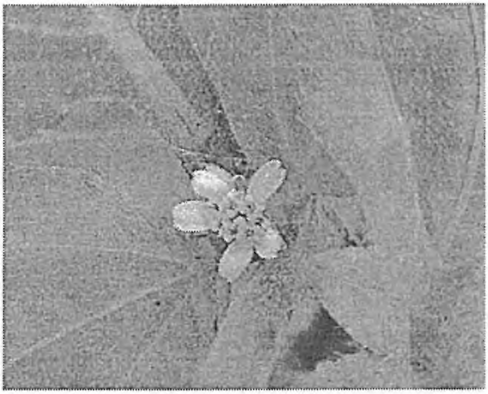


Fig. 10

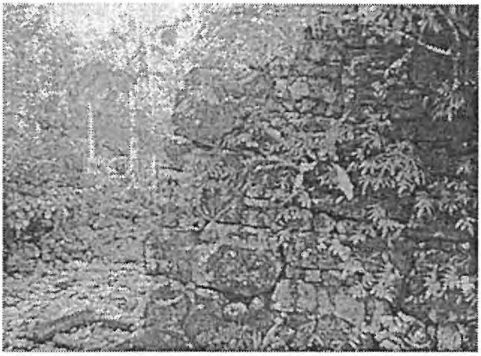


Fig. 11

Fig. 12

Fig. 13

Fig. 14

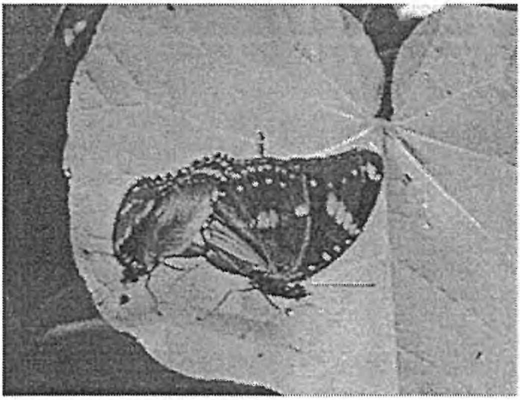


Fig. 15

Fig. 16

Photos courtesy Kelvyn Dunn

EXCURSION REPORT

Excursion to the Greening Australia Nursery, The Gap, Saturday 20th October 2007 led by Alisha Steward

This excursion differed from the "usual" BOIC ones. The idea was to meet at the Greening Australia Nursery at The Gap at 10am, have a chat to nursery staff, and look at (and purchase, if desired) some of the plants on offer. It was also an opportunity to observe the many butterflies and other invertebrates that frequent the nursery. By 5 minutes to 10am I was slightly worried, as no one had turned up! Then, to my delight the members started to arrive sporadically over the next half hour or so, phew! In the end we had a turn out of over 10 people, which was great! A few people lived in The Gap and didn't know that the nursery existed, so it was great to introduce everyone to my most favourite nursery in Brisbane.

Han, a Greening Australia volunteer, gave us a run-down on the nursery. The nursery is run by volunteers, and is home to a large diversity of plants that are native to south east Queensland: from rainforest trees to dry sclerophyll species, grasses, and even aquatic plants. Many butterfly host plants were available on the day. You can check out the Greening Australia website to see what is in stock, and you can also use the website to see what species are indigenous to your suburb. The nursery itself is a wealth of knowledge. There is a room filled with fact sheets and other information, and the volunteers are happy to assist and have a good knowledge of locally native species.

After our introduction to the nursery we were left to our own devices. Many of us purchased some tubestock, at $2 a piece (cheaper if you buy in bulk). I spent every last dollar in my wallet on plants! And I could have bought more… A small selection of larger, more established plants was also on offer, at a higher price.

*During our time at the nursery we were involved in a mistletoe project – placing roughly 120 seeds from the mistletoe *Amyema cambagii* (a butterfly host plant) onto 20 *Casuarina glauca* trees. This involved squeezing the sticky mistletoe berry from its capsule, and placing it on a suitable spot on the host tree. There is no problem with adhering the gooey seed to the tree. The fork of a branch is a suitable location for positioning the seed. We placed approximately 10 seeds onto each tree with the hope that at least one seed would germinate. With many hands to assist, this process didn't take long at all.

A few of us were led by Han to see what work the volunteers had been up to. There is some land adjacent to the nursery that the volunteers have rehabilitated into a thriving rainforest. One of the highlights was an impressive Richmond Birdwing vine, scrambling up a dead tree. Tubestock of the vine was available for purchase at the nursery.

The original plan was to visit the nursery, and then meet up for lunch at Brisbane Forest Park, not far away. However after walking around the nursery for hours (yes, it is possible!) I think that everyone was happy to go straight home and plant their new babies. A trip to Brisbane Forest Park would make a lovely excursion in its own right, so look out for that one in future newsletters! (Ed. – actually this one)

The Greening Australia Nursery website is:
http://www.qld.greeningaustralia.org.au/gaqotsasp/default.asp **_Alisha Steward_**

***Ed.:** This newspaper article is a follow-up to the BOIC project that was instigated by John Moss and Greening Australia's Doug Mohr on contract to the Main Roads Dept.The article appeared in The Courier Mail on 30.11.2007 and is reprinted with permission.

" Conservationists are growing mistletoe not for Christmas but to help a butterfly survive a construction project. Swamp oaks have to be cut down to make way for the Hornibrook Bridge duplication on Brisbane's northside.

As part of the project, the Main Roads Department asked the Greening Australia nursery at The Gap if it could grow mistletoe in swamp oaks which would then be replanted in Decker Park near the bridge. Nursery manager Han van Beek said yesterday the Satin Azure butterfly rescue project was one of the most unusual he had undertaken. 'I never thought I'd be growing mistletoe in a nursery, given it's a parasite,' he said.

In a symbiotic relationship, the butterfly lives mostly on needle-leaf mistletoe. Its seeds are spread by birds. Seeds lodge in the forks of swamp oaks, where they get a foothold. The butterfly lives on the mistletoe and relies on an ant to protect its larvae. In return, ants receive a honey-dew exudate produced by glands on the larvae. Mr. Van Beek said the larvae fed at night and the ants let the larvae use their nest during the day, protecting them from predators.

Seedling springs of mistletoe were collected and the fleshy part of the seed was placed into the fork of nursery-grown oaks. Mr. Van Beek said 'This imitates what happens in nature when birds pick up the seeds from one tree and then transfer it to another. Within a week you can see the tiny growth appear which drills into the branch and anchors the plant. We are looking after the mistletoe as it grows and when it is developed we will take the trees back to Decker Park for the butterflies to live on.'

The Satin Azure is not listed as threatened but local entomologists are concerned that populations are decreasing.

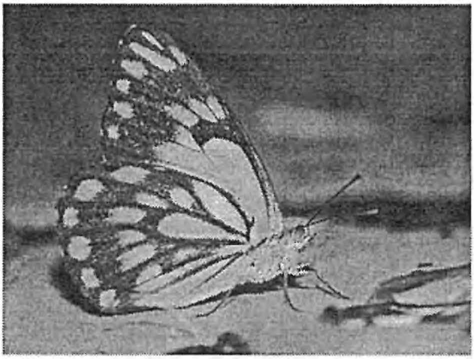
The State Government is duplicating the Houghton Highway by building a bridge between the Deagon Deviation at Brighton and Elizabeth Ave. on the Redcliffe Peninsula."

AT THE LIGHT TRAP

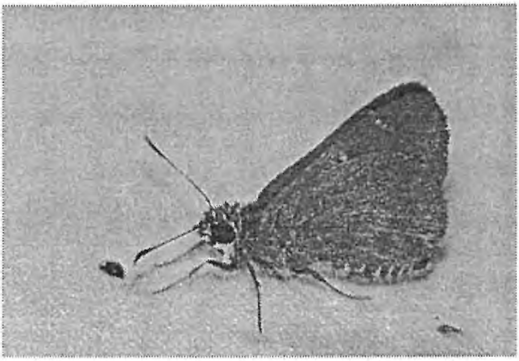
It is not always moths that turn up at the light trap, other creatures include, beetles, flies, lacewings, dragonflies, cicadas and toads looking for a meal. Butterflies also make an appearance, so here is a quick look at the butterflies that have turned up at my light trap.

On the 4th May 2007 on my bush block west of Bundaburg the Two-spotted Line-blue (*Nacaduba biocellata*) made an appearance (a bit hard to pick from the photo as one of its spots had been ripped away). On the 22nd September 2007 the Brown Ringlet (*Hypocysta metirius*) dropped in at Sheldon. Also at Sheldon on the 13th October 2007, as part of its migration, the Caper White (*Belenois java*) paid a visit and on the 25th October the White-brand Grass-skipper (*Toxidia rietmanni*) dropped in with a repeat performance on the 30th October 2007.

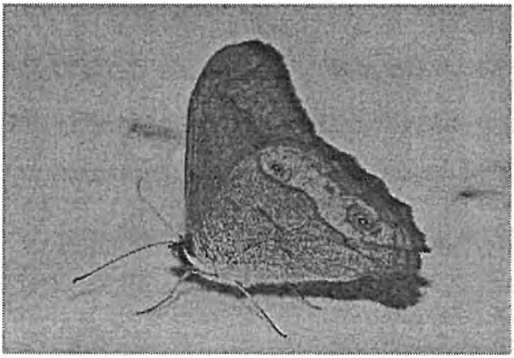
An unexpected surprise occurred at the Perry River light-trap when John Moss discovered, during rain, a large yabby wandering around with the beetles and toads at the base of the light sheet! ***Peter Hendry***



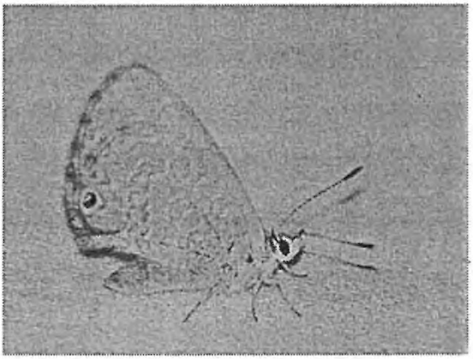
Caper White (*Belenois java*)



White-brand Grass-skipper (*Toxidia rietmanni*)



Brown Ringlet (*Hypocysta metirius*)



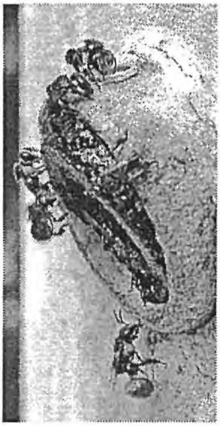
Two-spotted Line-blue (*Nacaduba biocellata*)

AUSTRALIAN NATIVE BEES #12

The Cadaghi Conundrum (Part 2)

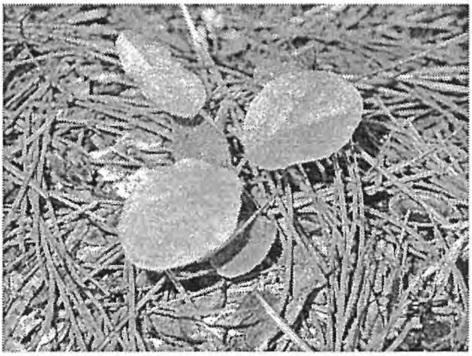
In part 1 of this article we began our exploration of the puzzling relationship between our native stingless bees and the Cadaghi tree *(Corymbia torelliana).* We discussed the reproductive cycle of the tree and discovered that the Cadaghi employs stingless bees (mainly *Trigona spp*) to disperse its seeds. But how does the tree entice our little social bees to carry this unwanted burden? They have no use for seeds and by mid summer when the Cadaghi seeds have matured inside the brownish gumnuts there is no nectar or pollen left on the tree for them to collect.

The answer lies in the stingless bee colony's requirement for resin, which they mix with the wax they produce themselves to create their brown building material known as cerumen. Now resin is not uncommon in the Australian bush. All manner of native trees exude this substance, usually to protect themselves from insect attack. Stingless bees collect this material in their pollen baskets and carry it back to their nest as required. In normal circumstances the occasional forager will be seen returning with her back legs bearing glistening droplets, ranging in colour from clear to translucent red depending upon the resin source.



A *Trigona carbonaria* worker struggles home with a Cadaghi seed

Cadaghis also produce resin, and there is something about it that is especially attractive to *Trigona* bees. It is not overstating the case to say they become obsessed with it. Some beekeepers report that their bees will travel further than their normal foraging range to collect the stuff. Trigona bees usually abandon all other resin sources and may even suspend normal foraging for nectar and pollen while the Cadaghi is producing resin. Presumably it is a special odour that draws them to this substance. Even to us the resin has a distinctive smell when it accumulates inside the hive, and no doubt the bees are better equipped than us to detect it from afar.

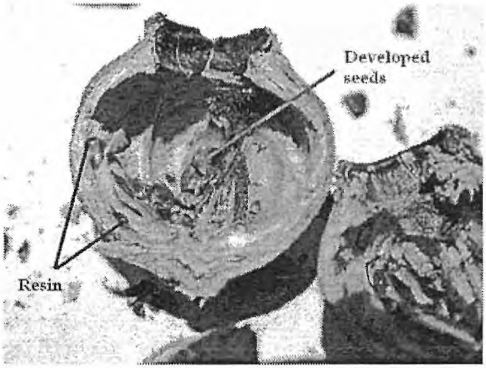


This young Cadaghi has a stingless bee to thank for its dispersal.

The Cadaghi does not produce this resin randomly and send the bees into a collecting frenzy when they are not required. It times the release of the resin to coincide with its seeds reaching maturity and then exudes it in small droplets inside the gumnut adjacent to these seeds. The bees don't hesitate to enter these gumnuts to pack the resin into their pollen baskets. What they don't anticipate as they manoeuvre within the confined space is that the resin droplets on their legs will come in contact with the nearby seeds which stick on firmly. Unable to remove them the bees undertake their return journey to the hive laden with both resin and seeds. Many a bee must drop by the wayside from exhaustion. If conditions are favourable for the seed where she falls a new Cadaghi will soon begin to spread its distinctive fuzzy red leaves and branchlets.

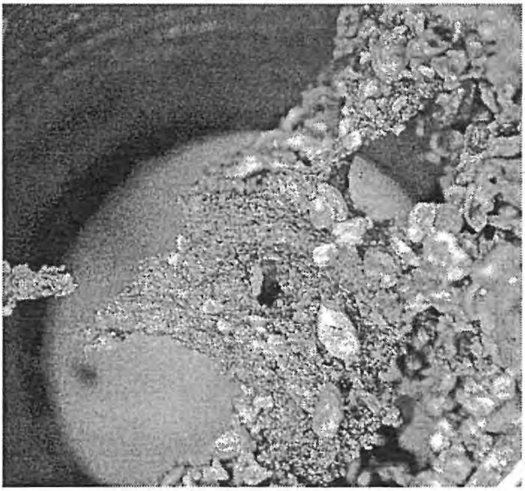
The loss of a few foragers in their twilight days from exhaustion is not significant to a strong colony and is hardly reason for stingless beekeepers to malign this hardy, shady tree, native to a relatively small area of North Queensland. However, the tree's perfidy does not stop there. As we have seen in part 1 the seeds can accumulate in great numbers in and around hive entrances, especially those of *Trigona carbonaria* where the bees deposit sticky resin to deter invaders.

The aggregation of seeds can be so great that the entrance becomes blocked or very nearly so. Consequently ventilation may be compromised in artificial hives and as the influx of seed coincides with the heat of summer this can have disastrous consequences for the bee colony. But most seeds get taken inside where they occupy valuable hive space. Some are later removed by the bees and discarded, but large numbers become incorporated into the hive structure either as whole seeds or as chewed up pieces. As a result the normally smooth putty-like consistency of processed cerumen becomes granular. Beekeepers hoping to harvest this hive product find that its quality is severely degraded.



A dissected Cadaghi gumnut showing the mature seed and resin droplets.

The tree has one last nasty trick to play. Most stingless beekeepers agree that the resin the bees so avidly collect at such a cost has a low melting point. The summer heat may be enough to soften it to the extent that the internal hive structure starts to collapse. Many colonies have been lost when the slumping cerumen and stored resin buried the queen and brood.



Cadaghi seed being incorporated into the cerumen structure.

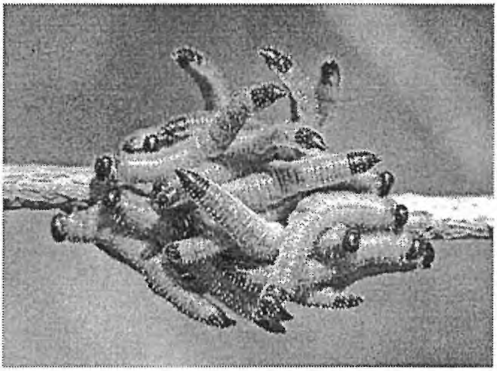
Herein, of course, lies the conundrum. If we accept the current scientific opinion that *Corymbia torelliana* uses stingless bees to disperse its seeds then to evolve features that lead to the loss of bee colonies would seem to be contrary to the tree's own interests. Could it be that *Trigona* bees only fell under the spell of the tree's resin by mistake and this type of bee was not intended to be the tree's primary dispersal agent? Perhaps there once existed a different bee or some other insect (maybe an ant) more suitable to the tree's purposes. Or could it be that the very reason such a hardy, adaptable tree had such a limited natural distribution is because it got its seed dispersal strategy wrong by presenting a hazard to stingless bees outside that range?

Pure speculation I know, but what we can be sure of is that the Cadaghi now has us modern humans to thank for its much greater area of distribution. Who could have anticipated that its widespread planting in public and private gardens would give rise to these claims about its adverse effects on stingless bees? It highlights the fact that, despite extensive research, it may be impossible to predict all the repercussions of relocating even native plants and animals outside their natural range.

Season's greetings to all. ***John Klumpp***

All photos by John Klumpp

IN THE GARDEN WITH PETER



Sawfly larva (*Perga sp.*) Photo Peter Hendry

Looking for all the world like moth or butterfly larvae, these are in fact the larvae of the Gum Leaf Sawfly (*Perga sp.*) I photographed this cluster in my garden on a gum sapling. They congregate in the day for protection and will all wiggle their tails when disturbed and are capable of secreting a distasteful fluid from their mouths. They disperse at night to feed. The larvae pupate in a cocoon in leaf litter.

Peter Hendry

REVIEWS

Review of the new C.D. produced by K.L. Dunn and L.E. Dunn.

Dunn, K.L.& L.E. 2006, *Review of Australian butterflies – 1991: Annotated version.* (CD-ROM). Melbourne, Australia: Published by the authors. Aus $45 *(Includes postage and handling.)* Available from www.Calodema.com
Total pages I-XII and 1-898pp. Total number of figures and tables is 964.

For those of you who do not know me, my name is Bob Miller and I have been studying butterflies and their lifecycles as an amateur for well over forty years now. I am currently in the process of recording butterfly lifecycles on a CD.

I have been asked if I would do a review of this new annotated version on CD of the original works by Dunn K.L. and L.E. 1991- *Review of Australian Butterflies:*

Distribution, Life History and Taxonomy. Parts1-4, Melbourne, Australia: Published by the authors.

I must admit from the beginning that I was not familiar with the original works by Dunn and Dunn until I was sent the annotated version to review. I also must say that if I had possession of those volumes from the start, my quest for searching out butterfly lifecycles could have been much easier.

For others who did not know about the project, the Dunns started their database back in 1983. This was soon after microcomputers first entered Australian households and they wrote their own software to store and map the information. They gathered this information from several museums during their spare time and many private collectors later sent them records. Within a few years their database had grown to nearly 89,000 records, which they used to write the original volumes.

Each species (and some subspecies) have their own distributional map with each record marked with a spot, rather than the usual way of filling in the whole area of distribution as seen in many other publications. This is definitely a better way to pinpoint the occurrence of species and subspecies a lot more effectively.

But enough of that, the original works have already proven themselves as a very useful tool to anyone interested in any aspect of entomology, this version on CD is now a new computer age version of the original works with many annotations to bring it up to date with the currently available information.

Being in CD-ROM format makes it easily accessible to entomologists in the field, many of whom already use laptops to download photographs or record data. Because it is in PDF form, a simple click on the search icon located in the upper toolbar will enable you to find everything related to your search quickly. No more flicking through pages trying to find the required information!

For those of you who want a CD so that you can access a lot of specimen photos, this is not the one for you, as there are only two photos of specimens in the whole work. In my opinion, this work is a must for anyone with an interest in entomology who owns a computer.

Bob Miller

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Rainforest Climbing Plants – a field guide to their identification by Gwen Harden, Bill McDonald and John Williams

This newly-published, glossy, soft-covered, A4 sized book replaces an earlier 50 pp edition (1984), by two of the current authors, known as the "Green Book" (Not to be confused with the BOIC host plant book of the same colour!) which described, illustrated and compared 140 species of vines and scramblers from (mainly) NSW rainforests.

The new book of 190 pages describes and illustrates 265 species and has been completely rewritten, although keeping to the essentials of the original format. The range of the book now extends from southern Victoria roughly to Rockhampton at the Tropic of Capricorn and includes species in vine scrubs, the drier inland extensions of rainforests. It also includes marginal species from rainforest edges and wet sclerophyll ecotone, as well as many exotic and or weedy species.

The descriptions have been expanded and the nomenclature has been brought up to date with the addition of new illustrations of fruit and/or seed. The book also includes a comprehensive, illustrated glossary and a large reference/bibliography section. The single index is clear and easy to follow, with the main entries in bold.

The introductory section gives useful information on

- how to use the book for identifications
- nomenclature and use of botanical and common names
- plant distributional ranges
- definitions of all rainforest types and subforms
- descriptions of same
- maps of rainforest areas of NSW, Vic and subtropical Qld.
- special features of climbing plants

The mainly dichotomous, easy to follow keys to species are based on vegetative features including specialised climbing structures. These 15 keys logically divide the plants (in 15 groups) down to each species. They are preceded by another key which identifies all 15 groups enabling easy group placement of the plant in question. All 16 keys have line-drawing illustrative examples.

The main descriptive section sensibly uses the same group nomenclature system as in the keys. The botanical descriptions use a minimum of technical language and include current botanical name, previous name (useful, as much reassigning has occurred in recent years) and common name. There are notes on: distribution, habit, habitat; whether cultivated, naturalised or neither; whether exotic or native. There are clearly written descriptions of stems, leaves, flowers and fruit and any other relevant/useful structure, plus accurate line drawings of stem, leaves, fruit seed and other parts where relevant. Although flowers could not be included in the illustrations the written descriptions are quite adequate.

One useful backup I noticed was the addition of duplicate entries for a few species which could fall into more than one group or subgroup, depending on whether or not a particular feature was present on the specimen in hand. This helps to avoid going down the "wrong track"!

This book is an essential companion to the 2006 landmark publication Rainforest Trees and Shrubs (or "Red Book") by the same authors and thus completes the rainforest "macroflora". Students of both botany and entomology would find these books invaluable – they contain a large percentage of our moth and butterfly hostplants and provide the illustrations that some of our members have asked for, which we were not able to include in our hostplant publication.

The authors, and Gwen in particular, have put an enormous effort into producing these two books, which to my knowledge, have no competitors elsewhere. They are both unique and highly accurate and fill a gap between their earlier editions and the few (incomplete) colour photo illustrated books (such as the Nicholson volumes) currently available.

Both books are available directly from the senior author and illustrator, Gwen Harden, for a limited time, at the special price to our members of $35 "green book" and $45 "red book" including postage. Payment can be by cheque/money order/Visa or Mastercard. Gwen's contact details are:- PO Box 186, Nambucca Heads NSW 2448 or by email to gwenharden@yahoo.com.au . ***John Moss***

* * *

"Australian Stingless Bees, A Guide to Sugarbag Beekeeping" by John Klumpp and published by Earthling Enterprises, is a welcome and needed addition to the available information on the stingless bees in Australia. John has drawn on years of experience and innovation to put together information essential to helping the amateur and enthusiast alike to understand the biology and cultural needs of the Australian stingless 'sugarbag' bees. At the same time he has presented information that will help all readers progress to the keeping of the bees themselves, whether it be for interest or a garden 'pet', pollination or the production of that most valued 'sugarbag' honey. He has acknowledged the contributions made by those who have preceded him in this interest, those who also had 'caught the bug' and have worked to further their keeping. No doubt further generations of stingless bee keepers will be stimulated and encouraged by the ideas presented in this book. The importance of this group of bees to other cultures overseas is mentioned early, as the equivalent bees overseas have been used by indigenous groups for a very long time indeed.

John describes how he "caught the bug", a condition so common among stingless bee keepers. They are very captivating little insects. How they can be incorporated in gardens of all sizes is discussed. The species of bees that exist in Australia and their different nest structures and biology is covered in some detail. The "How, when, where and why" of finding their natural homes in bushland is covered and a list of colonies in public places included for the enjoyment of all who care to visit them to observe the everyday life of these little bees. The everyday care of colonies, the retrieval of colonies from damaged trees and their boxing, is described and illustrated to the point that even a beginner can proceed with excellent chance of success.

The diverse range of artificial structures in which the bees are being housed is presented. Foremost, in overall design and finish, is John's own KITH round hive that he assembled with a superb finish, and uses with great effect to house and propagate his colonies. The more advanced tasks of boxing from retrieved logs, splitting and eduction propagating is very thoroughly covered, along with descriptions of some of the pests and problems that have been found to affect the stingless bees in domestication, along with ways to manage those problems of course.

The Cadaghi tree (*Corymbia torelliana*), and its interaction with *Trigona carbonaria* especially, has its own chapter, as the obsessive resin collection that it encourages impacts negatively on the welfare of hives in some situations. The section on garden plants that are much more friendly to the bees will give ideas on enriching the garden environment with plants favoured by the bees.

The future is not left out, John comments on likely developments and ways they might be used.

Every section of the book is profusely and instructively illustrated, the writing style friendly but illuminating, with a touch of the lighthearted humour for which John is known. It is an easy read, but very infective, as it draws one into the amazing intricacies of the social life of these little insects.

Bob Luttrell (Bob the Beeman)

Ed. The book is available from BOIC and also Earthling Enterprises, PO Box 5167, West End, Qld. 4101 at a cost of $3~~0~~4.95 plus $4 postage and handling.

SEED BANK NEWS

Our friend and colleague Alan King, from Townsville, has kindly sent us seed of several northern species and forms of Sennas (including the hairy form of *S. sophera* from the Forty Mile Scrub) and a few other hard to obtain hostplant seeds such as Tree Cullen [*Cullen* (*Psoralea*) *leucanthum*].

Alan's planting tips are very specific and essential to ensure good germination. (The writer had very poor results when he once ignored these simple steps!!)

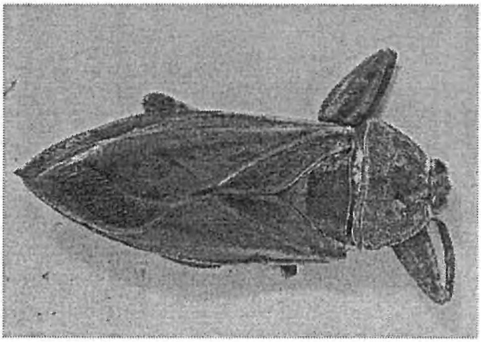
For more information about species and availability ring John Moss on 07 3245 2997 – daytime preferably. (Phone switches to message bank after 16 rings and John will return your call.)

John Moss

YOU ASKED

Sharon White sent us a bug through the post and wrote (in part). "I found an interesting insect which is enclosed in the hope that, first it makes it through the postage system, so hopefully someone can identify it for me and tell me something about it."

Well Sharon, it did make it through the post, albeit in pieces! I have reassembled it for the photo. The bug in question is the Giant Water Bug (*Lethocerus insulanus*). As the common name implies it is an aquatic insect that prefers wetlands and ponds with lots of water plants. It is a giant among the bug world, measuring up to 70cm in length. Underwater it breathes through a siphon at the rear end, which acts like a snorkel. It hunts small fish, tadpoles and frogs as well as snails and aquatic insects, catching its prey with its forelegs and piercing it with its rostrum (mouth parts). They are capable of flight and are attracted to lights and are known to bite (which can be very painful!).



Giant Water Bug (*Lethocerus insulanus*)

The Giant Water Bug occurs in eastern Australia and the Indo-Pacific. In SE Asia it is used for flavouring food or eaten battered and deep fried.

Thanks Sharon **_Peter Hendry_**

BACK ISSUES

Back Issues of the Club Newsletter are available at a cost of $2 each plus postage (1-2 copies $1.10 - 3-6 copies $1.50). **All newsletters (issues #1-45) are now available on a CD-ROM at a cost of $20 plus $2 P&P to members and $35 plus $2 P&P to non-members.**

WORLDWIDE WEBSITES TO WATCH

http://www.zeta.org.au/~anbrc/index.html is the site of the Australian Native Bee Research Centre promoting the preservation and enjoyment of Australia's 1,600 species of native bees.
http://www.sugarbag.net Earlier this year, Dr Tim Heard launched 'Sugarbag', his own personal website on Australian stingless bees. It features a wealth of information about stingless bees and some beautiful photographs of the bees and their nests.

OTHER GROUPS' ACTIVITIES

Dr. Tim Heard will present Stingless Bee workshops at the following dates and venues - 24 Feb 2008 at Kumbartcho Sanctuary, Eatons Hill. Call (07) 3480 6666 to register, or email Lyndall Rosevear [Lyndall.Rosevear@pinerivers.qld.gov.au].
and - 16 March 2008 at Redlands IndigiScapes Centre, Capalaba. Contact Craig Doolan, (07) 3820 1108, craigdo@redland.qld.gov.au,

JON'S NEW CALEDONIAN BUTTERFLIES

- In relation to the photos shown in Issue 46, Kelvyn Dunn has made the following comments – "I have seen all those butterfly species in New Caledonia which you illustrated, including juveniles of the remarkable endemic, *Paratisiphone lyrnessa.* The larvae don't look like *Tisiphone abeona*, but the pupae are very close. *Hypolimnas misippus* is a fairly recent record for this island, I saw many hilltopping during my stay in Jan & Feb 2004. The others are *Doleschallia tongana*, presumably, but *D. browni* occurs nearby in Vanuatu and does looks rather like the illustrated basking adult in Fig. 2., and *Euploea tulliolus*. I saw two distinct forms of the latter flying together in riparian forest near Noumea, possibly a superspecies?"

Ed.: I will have more photos for you next issue.

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Visit to Ross Kendall's butterfly house followed by Planning and Management Meeting – all members welcome

What: Ross has a large flight cage, rearing rooms and masses of host plants for some of the common butterflies for release at weddings. This will be followed by our planning meeting which is informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members.
When: **Saturday, 9th February, 2008 from 10 am – Planning Meeting begins at 1 pm**
Where: 17 Eldon Street, Indooroopilly
Bring: Your morning tea and lunch if you are staying for the Planning Meeting
Contact: Ross on 3378 1187 – email ross@butterflyencounters.com.au or Daphne on 3396 6334 email bowden@itconnect.net.au to RSVP or for more details

A visit to Brisbane Forest Park

What: So close to Brisbane, but have you ever been there?? From the EPA website: "Brisbane Forest Park is striking in its diversity of environments and plant communities. Take a journey through open eucalypt woodlands, scribbly gum forests and lush subtropical rainforests. More than 800 species of plants are found in these forests, some of which are rare and threatened." No doubt many of the plants are invertebrate host plants! We will stroll along a few of the many walking tracks within the park, observing invertebrates along the way. We may stop at Jolly's Lookout or McAfee's Lookout to take in some views, and perhaps see some hilltopping butterflies. Then we will stop for lunch in a nice bush setting.

When and where: **Sunday 16th March 2008**. Please meet at the Brisbane Forest Park Information Centre/Headquarters carpark at 10am, before we drive off to other parts of the park. Perhaps some people can leave their cars here and we can car pool? The Information Centre is located at 60 Mt Nebo Road, The Gap, and is 12 kilometres from the city centre. We plan to have lunch at the Bellbird Grove Picnic Area. It is equipped with toilets and other facilities. See http://www.epa.qld.gov.au/parks_and_forests/find_a_park_or_forest/brisbane_forest_park/ for information on how to get to the park. Follow the links to see a JPG map of the area.

Bring: Your lunch, water, hat, sunscreen and wear your walking shoes. Also feel free to bring along any invertebrate identification guides you may have. Some will be available on the day.

Contact: Alisha ph. 3275 1186 or 0402 091 863 or email jon@escapenet.com.au. Mobile phone will be switched on before and during the excursion. Excursion will be cancelled in extreme wet weather. Please ring mobile on the day if in doubt.

If you plan to attend one of the above events, please contact the person indicated in case, for some unforeseen circumstance, the event has had to be postponed or cancelled

DISCLAIMER

The Newsletter seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The Newsletter is a platform for people to express their views and observations. These are not necessarily those of the BOIC. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this newsletter is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provides illustrations including the cover
- Daphne Bowden who works on layout, production and distribution
- John Moss and Martyn Robinson for scientific referencing and proof reading of various articles in this issue of the newsletter
- Helen Schwencke for conceiving the original idea for a Newsletter

We would like to thank all these people for their contribution.

ARE YOU A MEMBER

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible.

Membership fees are $15.00 for individuals and $20.00 for families, schools and organizations.

If you wish to pay electronically the following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership no. and surname e.g. **234 Roberts**. You will find your Memb. No. on the mailing label of the newsletter. Please advise us if you change your contact details including your email address.

Butterfly and Other Invertebrates Club Inc.
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Memb. No. **30** due July 2008

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PALMERSTON N.T. 0831

Next event - Visit to Ross Kendall's butterfly house followed by Planning and Management Meeting - **Saturday, 9th February, 2008** (See BOIC Programme)